UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,316	03/25/2005	Takeo Azuma	5077-000237/NP	8647

27572   7590   06/23/2008
HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER
RASHID, DAVID

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
06/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/529,316	AZUMA ET AL.
Office Action Summary	Examiner	Art Unit	
	DAVID P. RASHID	2624	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>11 January 2008</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-16</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-16</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>11 January 2008</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Amendments

[1]   This office action is responsive to the claim and specification amendment received on

January 11, 2008. Claims 1-16 remain pending.

Drawings

[2]   The replacement drawings were received on January 11, 2008 and are acceptable.   In

response to applicant's drawing amendments and remarks, the previous drawing objections are

withdrawn.

Claim Rejections - 35 USC § 101

[3]   In response to applicant's claim amendments and/or remarks received on January 11,

2008, the previous claim 35 USC § 101 rejections are withdrawn.

Claim Rejections - 35 USC § 102

[4]   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

[5]   **Claims 1-2, 4-14,** and **16** are rejected under 35 U.S.C. 102(b) as being anticipated by

U.S. Patent No. 5,291,560 (issued Mar. 1, 1994) [*hereinafter* "Daugman"].

Regarding **claim 1**, *Daugman* discloses a counterfeit eye discrimination method (fig. 1)
comprising the steps of:

receiving image data of a photocopy image ("FIG. 2 is a photograph of a human eye" at
3:50-51; fig. 1, item 10) including an eye (fig. 2); and

detecting presence or absence of roughness (roughness is a measurement of a small-scale
variation; thus the small-scale variation between the stored reference code of an original iris and
that of the present code in computing Hamming distance is a measure of "roughness") in the
image by image processing (fig. 1, item 26; fig. 6) to the image data;

wherein the eye is judged (fig. 1, item 28) to be a counterfeit eye (a counterfeit eye when
the image is of an eye of an imposter in fig. 6) when roughness is detected in the image.

Regarding **claim 2**, *Daugman* discloses the counterfeit eye discrimination method of
claim 1, wherein the image processing includes the steps of:

performing band limitation ("quadrature bandpass filters" in 3:52-55; fig. 3; fig. 4) to the
image data; and

extracting a predetermined feature (fig. 4C to generate the code when fig. 4B Gabor filter
above or below 0 creating the Hamming distance) from the band-limited image data, wherein the
presence or absence of roughness is detected (fig. 1, item 26; fig. 6) using the extracted feature
data.

Regarding **claim 4**, *Daugman* discloses the counterfeit eye discrimination method of
claim 2, wherein pixel coordinate values ("polar coordinate system" 5:1-11) are used in
combination with pixel values ("1" or "0" in fig. 4C) in the extraction of the predetermined

feature (fig. 4C to generate the code when fig. 4B Gabor filter above or below 0 creating the

Hamming distance); code at the top of fig. 2).

Regarding **claim 5**, *Daugman* discloses the counterfeit eye discrimination method of

claim 2, wherein a center of a pupil or an iris is used in combination (the polar coordinate system

is centered around the center of the pupil and iris, thus the center of the pupil and iris being

"used") with pixel values ("1" or "0" in fig. 4C) in the extraction of the predetermined feature

(fig. 4C to generate the code when fig. 4B Gabor filter above or below 0 creating the Hamming

distance).

Regarding **claim 6**, *Daugman* discloses the counterfeit eye discrimination method of

claim 2, wherein a high-pass filter or a band-pass filter ("quadrature bandpass filters" in 3:52-55;

fig. 3; fig. 4) is used in the band limitation.

Regarding **claim 7**, *Daugman* discloses the counterfeit eye discrimination method of

claim 2, wherein the extraction of the predetermined feature (fig. 4C to generate the code when

fig. 4B Gabor filter above or below 0 creating the Hamming distance) is performed to a vicinity

(fig. 2 where it is in a "vicinity" of both the iris and pupil region) of an iris region or a pupil

region.

Regarding **claim 8**, *Daugman* discloses the counterfeit eye discrimination method of

claim 2, wherein the extraction of the predetermined feature (fig. 4C to generate the code when

fig. 4B Gabor filter above or below 0 creating the Hamming distance) is performed to a region

on or in a vicinity (the scanning areas in fig. 2 are in a "vicinity" of a line passing through both

the center of a pupil and iris) of a line passing through a center of a pupil or a center of an iris.

Regarding **claim 9**, *Daugman* discloses the counterfeit eye discrimination method of claim 1, wherein the image processing includes the steps of:

performing frequency analysis ("quadrature bandpass filters" in 3:52-55; fig. 3; fig. 4) to the image data;

extracting a predetermined feature (fig. 4C to generate the code when fig. 4B Gabor filter above or below 0 creating the Hamming distance creating the Hamming distance) from the frequency-analyzed data.

Regarding **claim 10**, *Daugman* discloses a counterfeit eye discrimination method (fig. 1) comprising the steps of:

receiving image data of a photocopy image ("FIG. 2 is a photograph of a human eye" at 3:50-51; fig. 1, item 10) including an eye (fig. 2);

performing band limitation ("quadrature bandpass filters" in 3:52-55; fig. 3; fig. 4) to the image data;

extracting a predetermined feature (fig. 4C to generate the code when fig. 4B Gabor filter above or below 0 creating the Hamming distance) from the band-limited image data; and

recognizing whether the eye is a counterfeit eye or a living eye (2:45-49) based on data of the extracted feature.

Regarding **claim 11**, *Daugman* discloses the counterfeit eye discrimination method of claim 10,

wherein in the recognition step,

distributions (fig. 10; fig. 6) of the predetermined feature of living eye images

("Authentics" in fig. 6) and counterfeit eye images ("Imposters" in fig. 6) are respectively

prepared beforehand,

a distance to data of the extracted feature (fig. 4C to generate the code when fig. 4B

Gabor filter above or below 0 creating the Hamming distance) from the feature distribution of

the living eye images and a distance thereto from the feature distribution of the counterfeit eye

images are calculated (all of the necessary distances calculations in fig. 6), and

the eye is judged to be an eye belonging to the distribution (fig. 6 with the cross-hatched

rate areas), from which the calculated distance is the shorter between the living eye and the

counterfeit eye (e.g. a Hamming distance of 0.2 is a shorter distance to a probable authentic

image, the longer distance would be to an imposter image).

Regarding **claim 12**, claim 10 recites identical features as in claim 12. Thus,

references/arguments equivalent to those presented above for claim 10 are equally applicable to

claim 12.

Regarding **claim 13**, claim 10 recites identical features as in claim 13. Thus,

references/arguments equivalent to those presented above for claim 10 are equally applicable to

claim 13.

Regarding **claim 14**, *Daugman* discloses an iris authentication method (fig. 1) comprising

the steps of:

performing iris authentication (fig. 1; fig. 1, item 28) based on image data of a photocopy

image ("FIG. 2 is a photograph of a human eye" at 3:50-51; fig. 1, item 10) including an eye (fig.

2); and

performing the counterfeit eye discrimination method of claim 1 or claim 10 to the image

data when a subject is authenticated as a person himself or herself ("confirming personal

identity" in 4:27-29; 13:26-41) in the iris authentication step.

Regarding **claim 16**, *Daugman* discloses an image discrimination method (fig. 1)

comprising the steps of:

receiving image data of an image (fig. 1, item 10); and

detecting presence or absence of roughness (roughness is a measurement of a small-scale

variation; thus the small-scale variation between the stored reference code of an original iris and

that of the present code in computing Hamming distance is a measure of "roughness") in the

image by image processing (fig. 1, item 26; fig. 6) to the image data,

wherein the image is judged to be an image projecting a printed matter (6:58-61 wherein

a photograph is "printed matter") when roughness is detected in the image.

Claim Rejections - 35 USC § 103

[6]   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

[7]   **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over *Daugman* in view

of U.S. Patent No. 4,641,349 (issued Feb. 3, 1987) [*hereinafter* "Flom et al."].

Regarding **claim 3**, while *Daugman* discloses the counterfeit eye discrimination method

of Claim 2, *Daugman* does not teach wherein the predetermined feature is one of or a

combination of two or more of moment, central moment, skewness and kurtosis of pixel values.

Flom et al. teaches what is considered one of the first (if not the first itself) iris recognition system wherein a predetermined feature is using the central moment (13:20-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the predetermined feature of *Daugman* to include using the central moment as taught by *Flom et al.* as "the present invention provides an identification technique based upon the recognition of the unique features of the iris and pupil, referred to herein as "iris identification".", *Flom et al.*, 1:45-48.

[8]   **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over *Daugman* in view of U.S. Pub. No. 2002/0107801 (published Aug. 8, 2002) [*hereinafter* "Jones et al."].

Regarding **claim 15**, while *Daugman* discloses a counterfeit printed matter discrimination method, characterized by comprising the steps of:

receiving image data of an image (fig. 1, item 10) of a photograph or real eye (fig. 2); and

detecting presence or absence of roughness (roughness is a measurement of a small-scale variation; thus the small-scale variation between the stored reference code of an original iris and that of the present code in computing Hamming distance is a measure of "roughness") in the image by image processing (fig. 1, item 26; fig. 6) to the image data,

wherein the photograph or real eye is judged to be a counterfeit printed matter (6:58-61 wherein a photograph would be "counterfeit printed matter") when roughness is detected in the image, Daugman does not teach wherein the image is of a bill or valuable paper.

Jones et al. discloses an automated document processing system using full image scanning that teaches wherein the image is of a bill or valuable paper (fig. 4C)

It would have been obvious to one of ordinary skill in the art at the time the invention

was made for the image of *Daugman* to include a bill or valuable paper as taught by *Jones et al.*

"to provide a document and currency processing system capable of processing documents

utilizing full image scanning and a currency discriminator.", *Jones et al.*, paragraph [0003].

Response to Arguments

[9]   Applicant's arguments filed on January 11, 2008 with respect to claims 1, 10, 13, and 15

have been respectfully and fully considered, but they are not found persuasive.

Summary of Remarks regarding claims 1, 10, 13, and 15

Applicant argues that the prior art references are involved with discriminating between

the eye of one person vs. the eye of another person. The prior art would be used, for example, to

authenticate a person by matching his or her eye characteristics with that of the stored

characteristics obtained during registration.

In order to more fully distinguish the applicants invention from the cited art, independent

claims 1, 10, 13 and 15 have been amended to recite that the received image data is of a

photocopy. This amendment is believed to be in accordance with the suggestion of the Examiner,

and is believed to render these claims and all claims dependent thereon to be allowable.

Examiner's Response

However, the claim amendment now reciting "receiving image data of a photocopy

image including an eye" (*emphasis added*) is anticipated by *Daugman*. One of the main

purposes of *Daugman* is to provide an "efficient method of finding and tracking the pupillary

boundary also provid[ing] an important safeguard against imposters. One obvious method for

trying to defeat an identification system based on iris patterns would be to present to the

videocamera a photograph of anothers person's eye, or even to wear contact lenses imprinted

with the image of an authorized iris." *Daugman*, 6:38-61. Fig. 2 itself is a "photocopy image" of

an eye. *Daugman* looks for fluctuation over time as "[a] photograph of an iris, or a contact lens

imprinted with an iris image, would not exhibit such variation in time.", *Daugman*, 6:38-61. The

Examiner states that one of the primary purposes of *Daugman* is to detect biometric identity

fraud that involves detecting whether or not the eye being imaged is real or a fake (*e.g.*,

photograph).

Conclusion

[10]   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

[11]   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to DAVID P. RASHID whose telephone number is (571)270-1578.

The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-74155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

David P Rashid
Examiner
Art Unit 26244

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624